

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Hameed A. NASEEM et al.

Appln. No.:

Filed: Herewith

For: METHOD OF DOPING SILICON, METAL DOPED SILICON,
METHOD OF MAKING SOLAR CELLS AND SOLAR CELLS

* * *

INFORMATION DISCLOSURE STATEMENT

Commissioner of Patents
P.O. Box 1450
Alexandria, VA, 22313-1450

Sir:

Applicants wish to make record the documents cited in
predecessor Application Nos. 10/029,859 filed December 31,
2001 and 08/855,229 filed May 13, 1997, whether cited by
Applicants or by the Patent Office. The documents are
listed on the attached Form-1449.

Respectfully submitted,

MWS:lmb:jb

Miles & Stockbridge P.C.
1751 Pinnacle Drive
Suite 500
McLean, Virginia 22102-3833
(703) 903-9000

By: 

Mitchell W. Shapiro
Reg. No. 31,568

July 14, 2003

FORM PTO-1449				Atty. Docket No. A-9508B		Appln. No.	
<u>LIST OF DOCUMENTS CITED BY APPLICANT</u>							
				Applicant Hameed A. NASEEM et al.			
				Filing Date HEREWITH		Group	
U.S. PATENT DOCUMENTS							
Examiner Initial		Document Number	Date	Name	Class	Sub-class	Filing Date
	AA	5,646,424	07/08/97	Zhang et al.	257	66	
	AB	5,595,944	01/21/97	Zhang et al.	437	41	
	AC	5,543,352	08/06/96	Ohtani et al.	438	487	
	AD	4,165,558	08/28/79	Armitage, Jr. et al.	438	93	
	AE	5,538,564	07/23/96	Kaschmitter	438	93	
	AF	4,190,852	02/26/80	Warner, Jr.	438	80	
	AG	5,589,008	12/31/96	Keppner	438	98	
	AH	5,711,824	01/27/98	Shinohara et al.	438	98	
	AI	5,730,808	03/24/98	Yang et al.	438	97	
	AJ	5,700,333	12/23/97	Yamazaki et al.	438	97	
	AK	5,562,781	10/08/96	Ingram et al.	438	96	
FOREIGN PATENT DOCUMENTS							
Examiner Initial		Document Number	Date	Country	Class	Sub-class	Translation
	AL	WO97/13280	04/10/97	WIPO			
OTHER (including author, title, date, pertinent pages, etc.)							
	AM	HAQUE, M. et al., "Hydrogenated Amorphous Silicon/Aluminum Interaction at Low Temperatures," <u>Materials Research Society Symposium</u> , Vol. 258, 1992, pp. 1037-1042.					
	AN	HAQUE, M. S. et al., "Degradation and Failure Mechanisms of a-Si:H Solar Cells with Aluminum Contacts," <u>IEEE First ECPEC</u> , 1994, pp. 642-645.					
	AO	LUQUE, A. et al., "Internal Quantum Efficiency of Back Illuminated n ⁺ pp ⁺ Solar Cells," <u>Revue De Physique Appliquee</u> , December 1978, pp. 629-632.					
Examiner				Date Considered			
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.							

FORM PTO-1449				Atty. Docket No. A-9508A		Appln. No.	
<u>LIST OF DOCUMENTS CITED BY APPLICANT</u>							
				Applicant Hameed A. NASEEM et al.			
				Filing Date HEREWITH		Group	
U.S. PATENT DOCUMENTS							
Examiner Initial		Document Number	Date	Name	Class	Sub-class	Filing Date
FOREIGN PATENT DOCUMENTS							
Examiner Initial		Document Number	Date	Country	Class	Sub-class	Translation
OTHER (including author, title, date, pertinent pages, etc.)							
	AM	Czbatyj, W. et al., "Comparison of low temperature polysilicon crystal growth on low cost substances," <u>J. Vac Sci Technol. A</u> , Vol. 9, No. 2, Mar/Apr 1991, pp. 294-298.					
	AN	Mayer & Lau, "Metallization and Phase Diagrams," <u>McMillan Publishing</u> , 1998, pp. 276-283.					
	AO	Francis, David H., "Trends in Flip Chip and Advanced Interconnection," <u>1997 International Conference on Multichip Modules</u> , pp. 25-28.					
	AP	Al-Nuaimy, E.A., "Excimer laser crystallization and doping of source and drain regions in high quality amorphous silicon thin film transistors," <u>Appl. Phys. Lett.</u> 69(25), 16 December 1996, pp. 3857-3859.					
	AQ	Smith, P.M. et al., "Excimer laser crystallization and doping of silicon films on plastic substrates," <u>Appl. Phys. Lett.</u> 70(3), 20 January 1997, pp. 342-344.					
	AR	Konenkamp, R. et al., "Reversible Doping of Hydrogenated Amorphous Silicon," <u>Solid State Communications</u> , 1990, Vol. 3, No. 5, pp. 323-326.					
	AS	Saito, N. et al., "Doping effects of aluminum on the properties of hydrogenated amorphous silicon-carbon alloy films prepared by magnetron sputtering," <u>Philosophical Magazine B</u> , 1990, Vol. 62, No. 5, pp. 527-536.					
	AT	Berry, W.B., "Low Temperature Diffusivity for Aluminum and Silver in Amorphous Silicon."					
	AU	Lathrop, J.W. et al., "Failure Mechanisms in Amorphous Silicon Solar Cells."					
	AV	Fukada, N., "Thermal Degradation of a-Si:H Solar Cells," <u>Technical Digest of the International PVSEC-1</u> , Kobe, Japan, pp. 229, 231.					
	AW	Lathrop, J.W., "Accelerated Stress Testing of a-Si:H Cells," <u>Proc. 2nd Int. Photovoltaic Science and Engineering Conference</u> , Beijing, China, August 1986, pp. 386-389.					
	AX	Delahoy, A.E., "Amorphous Silicon-Aluminum Materials," <u>Research on High Efficiency Single Junction Monolithic Thin Film a-Si Solar Cells</u> , Nov. 1985, pp. 13-20.					
	AY	Willing, F. et al., "Thermal Stability of Interconnected a-Si:H Solar Modules."					
	AZ	Baert, K.A. et al., "Amorphous-Silicon Solar Cells with Screen-Printed Metallization," <u>IEEE Transactions on Electron Devices</u> , Vol. 37, No. 3, March 1990, pp. 702-706.					
Examiner				Date Considered			
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.							

FORM PTO-1449				Atty. Docket No. A-9508A		Appln. No.	
<u>LIST OF DOCUMENTS CITED BY APPLICANT</u>							
				Applicant Hameed A. NASEEM et al.			
				Filing Date HEREWITH		Group	
U.S. PATENT DOCUMENTS							
Examiner Initial		Document Number	Date	Name	Class	Sub-class	Filing Date
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						
FOREIGN PATENT DOCUMENTS							
Examiner Initial		Document Number	Date	Country	Class	Sub-class	Translation
	AL						
OTHER (including author, title, date, pertinent pages, etc.)							
	AM	Ishihara, S. et al., "Low-temperature crystallization of hydrogenated amorphous silicon films in contact with evaporated aluminum electrodes," <u>J. Appl. Phys. 62(3)</u> , 1 August 1987, pp. 837-840.					
	AN	Haque, M.S. et al., "Aluminum-induced crystallization and counter-doping of phosphorous-doped hydrogenated amorphous silicon at low temperatures," <u>J. Appl. Phys. 79(10)</u> , 15 May 1996, pp. 7529-7536.					
	AO	Haque, M.S. et al., "Aluminum-induced degradation and failure mechanism of a-Si:H Solar Cells," <u>Solar Energy Materials and Solar Cells</u> , June 1996, pp. 543-555.					
	AP	Haque, M.S. et al., "Interaction of aluminum with hydrogenated amorphous silicon at low temperatures," <u>J. Appl. Phys. 75(8)</u> , 15 April 1994, pp. 3928-3935.					
Examiner				Date Considered			
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.							

FORM PTO-1449				Atty. Docket No. A-9508A		Appln. No.	
<u>LIST OF DOCUMENTS CITED BY APPLICANT</u>							
				Applicant Hameed A. NASEEM et al.			
				Filing Date HEREWITH		Group	
U.S. PATENT DOCUMENTS							
Examiner Initial		Document Number	Date	Name	Class	Sub-class	Filing Date
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						
FOREIGN PATENT DOCUMENTS							
Examiner Initial		Document Number	Date	Country	Class	Sub-class	Translation
	AL						
OTHER (including author, title, date, pertinent pages, etc.)							
	AM	Radnoczi et al., "Al induced and Sb-doped crystallization of a-Si", May 1, 1991, Journal of Applied Physics, vol. 69, no. 9, pp. 6394-6399.					
	AN	Gong et al., "Al-doped and Sb-doped polycrystalline silicon obtained by means of metal-inductied crystallization", Nov. 1, 1987, Journal of Applied Physics, vol. 62, no. 9, pp. 3726-3732.					
	AO						
	AP						
Examiner				Date Considered			
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.							